



## Seroepidemiology of Human Immunodeficiency Virus in Morocco during the period from 2013 to 2014

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### Abstract

The objective of this study was to determine the seroprevalance of human immunodeficiency virus in Morocco. This will establish public health priorities to adopt appropriate prevention policies. The HIV status of patients was determined by the Enzygnost® HIV Integral II kit, ELISA on BEP2000® Advanced PLC Siemens of Virology at the HMIMV Rabat. The specificity of the kit is 99.9%. Confirmation of positive Elisa test is performed by the Enzygnost® Kit HIV-1/2 Western blot. Quantification of viral load by real-time RT-PCR was performed on the COBAS AmpliPrep / COBAS TaqMan48® HIV-1 (Roche Diagnostics) with 20 copies / ml detection limit. A total of 7293 individuals were tracked. 40 people were screened HIV positive, a prevalence of 0.55% with a complete profile. The distribution according to sex was on behalf of men (67.5% in men and 32.5% in women) with a sex ratio (male / female) of 2.08. Through this study, we confirm that the prevalence of infection with virus type 1 human immunodeficiency is 0.55%, which is still low prevalence although the risk of rapid change is not deviate.



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# Introduction

Around the world many of infections were known as a major public health problem, the human immunodeficiency virus (HIV) infection is one of them. [1]. The HIV is a retrovirus that infects cells of the immune system, destroying or impairing their function. As the infection progresses, the immune system becomes weaker, and the person becomes more susceptible to infections. The most advanced stage of HIV infection is acquired immunodeficiency syndrome (AIDS). It can take 10-15 years for an HIV-infected person to develop AIDS; antiretroviral drugs can slow down the process even further. HIV is transmitted through unprotected sexual intercourse (anal or vaginal), transfusion of contaminated blood, sharing of contaminated needles, and between a mother and her infant during pregnancy, childbirth and breastfeeding. Ignoring the serological status of HIV is one of many important factors helping the propagation of the disease, in other hand its knowledge make easy to involve to the healthcare accesses; an early treatment can delay the development of the disease [2]. According to the World Health Organization (WHO) in the most affected regions, less than one in ten people with HIV know their status [3]. The objective of this study was to determine the seroprevalence of human immunodeficiency virus in Morocco. This will establish public health priorities to adopt appropriate prevention policies.

## Subjects and methods

### Subjects

The population that we have been studying included 7293 Moroccan patients tracked at the Laboratory of Virology at the Military Hospital of Instruction Mohammed V (HMIMV) in Rabat during the period that has been determined from January 2014 to December 2014.

### Methods

The HIV status of patients was determined by the Enzygnost® HIV Integral II kit, ELISA on BEP2000® Advanced PLC Siemens of Virology at the HMIMV Rabat. The specificity of the kit is 99.9%. Confirmation of positive Elisa test is performed by the Enzygnost® Kit HIV-1/2 Western blot. Quantification of viral load by real-time RT-PCR was performed on the COBAS AmpliPrep / COBAS TaqMan48® HIV-1 (Roche Diagnostics) with 20 copies / ml detection limit. It is a PCR in real time automated and performed in two stages:

Step 1: The extraction of nucleic acid and preparation of the reaction mixture are at COBAS® AmpliPrep according to the following chronology:

- Digestion of the separation membranes and the nucleic acid protein
- Training connections between the negatively charged nucleic acids and positively charged silica beads.
- Preparation of the reaction mixture (Mix + nucleic acid).

Step 2: Reverse Transcription, amplification, detection and quantification of the nucleic acid are in the Cobas TaqMan48® using fluorescent TaqMan probes and internal standard quantization.

Both devices are managed by a computer with the software AMPLILINK® 3.2.2 (Figure 1).

## Results

A total of 7293 individuals were tracked for a period of 365 days, thus corresponding to an average of 20 people a day. 40 people were screened HIV positive, a prevalence of 0.55% with a complete profile for a 1 infection with presence of Ac Anti glycoprotein GP160 and GP120 and presence of anti Ac protein, P24 (Figure 2). The average age was 42.02 years, ranging from 01 to 110 years. The distribution according to sex was on behalf of men (67.5% in men and 32.5% in women) with a sex ratio (male / female) of 2.08.

The greatest prevalence found that the group of people aged over 45 years with 37.5%. It was nearly similar to that of people aged 35 to 44 years, twice the prevalence among people aged 25 to 34 years. The lowest prevalence found that in people aged 01-24 years with 10%.

The search for opportunist cytomegalovirus infections was performed in all patients, 7 of them were affected by this microorganism. HIV co-infection -tuberculosis representatives 5% .and only one patient is infected with Plasmodium falciparum.

In our study, the effectiveness of antiretroviral therapy was consolidated by measurement of viral load in 19 (47.5%) HIV-positive patients, whose average has experienced a significant decrease significantly after treatment ranging from 4.80 log copies / ml to 2.50 log copies / ml with 10% of patients with undetectable.

## Discussion

The health issue of HIV / AIDS does not spare any countries on the planet despite the march of universal access to antiretroviral treatment and the effort invested in prevention. The struggle against HIV / AIDS goes beyond the medical and economic framework to involve the consideration of socio-political stability and anthropological considerations, without losing sight of the dark side of globalization making the planet a big village, where peoples has never been so close through international travel and migratory movements.

Morocco is among the countries with low prevalence (0.11%) [4], although the risk of rapid change is not rejected because of its location which converges a significant number of immigrants from neighboring countries sub-Saharan severely affected by the HIV / AIDS pandemic.

The results of our series showed that 0.55% of the infected patients were aged between 01 and 110 years, that they have shown opportunistic infections. These results are consistent with other studies in Morocco, which showed that the diagnosis of HIV infection in general is at an advanced stage of infection, despite multiple screening and awareness programs. This could be related to poor adherence to these efforts and difficulties in accessing the health care system for certain populations, especially in rural areas. [5] Our results show that 0.55% of our patients are infected with Ac Presence of Anti glycoprotein GP160 and GP120 and presence of anti Ac protein P24 is for a 1 infection, given that the geographic distribution of strains HIV-1 is different from one continent to another, from a continental region to another. considering population movements in which immigration, tourism and international travel, molecular map of HIV-1 is not static, it is scalable by the intrusion of import strains in areas where movements transcontinental and inter population are dynamic [6-8]. In this case, Morocco has a particularity: it maintaining long-standing relations with the rest of the world, particularly sub-Saharan Africa (highly endemic area of HIV) for which it serves as a transit illegal migration flows to sub-Saharan to Europe, there was this in more than a decade.

Co-infection HIV / Tuberculosis is an association of two heavy and dangerous disease but certainly can be controlled if the treatment is conducted and that monitoring is well established. Numerous studies have led to the finding that tuberculosis is the first opportunistic infection in AIDS. [9] In our study, the number of HIV co-infection tuberculosis was 5% lower than the results of the literature estimate that in three AIDS patient develops tuberculosis [10]. During 2013, over 9 million people were diagnosed with TB, and 1.1 million of these people were also living with HIV [11]. People living with HIV have weakened immune systems and are around 30 times more likely to develop opportunistic infections such as TB [12]. It is important that people who receive a positive HIV diagnosis are tested for TB and vice versa. Screening for TB should take place regularly, at every health clinic visit. Among people living with HIV, tuberculosis: is harder to diagnose, progresses faster, is more likely to be fatal if undiagnosed or left untreated, can spread to other areas of the body (extra-pulmonary TB), is more likely to return after being successfully treated and strains that are drug-resistant are even harder to treat [12].

About these results, it seems urgent to intensify the detection of HIV infection by targeting more specific groups such as students, the elderly and prostitutes and drug users, while searching for the factors can lead to the spread of infection in these groups.

## Figures

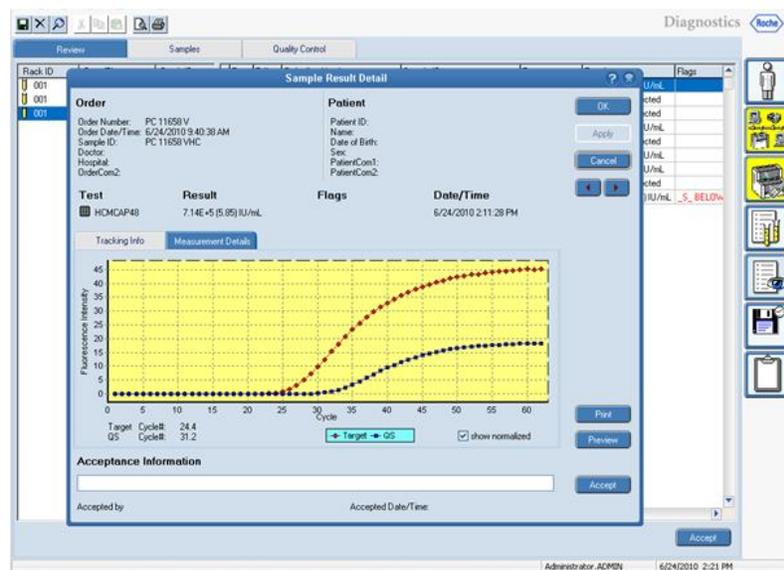


Figure 1: Interface AMPLILINK® 3.2.2 software. COBAS TaqMan® 48, the red curve represents the evolution of the viral load of the patient, and the blue internal standard quantification.

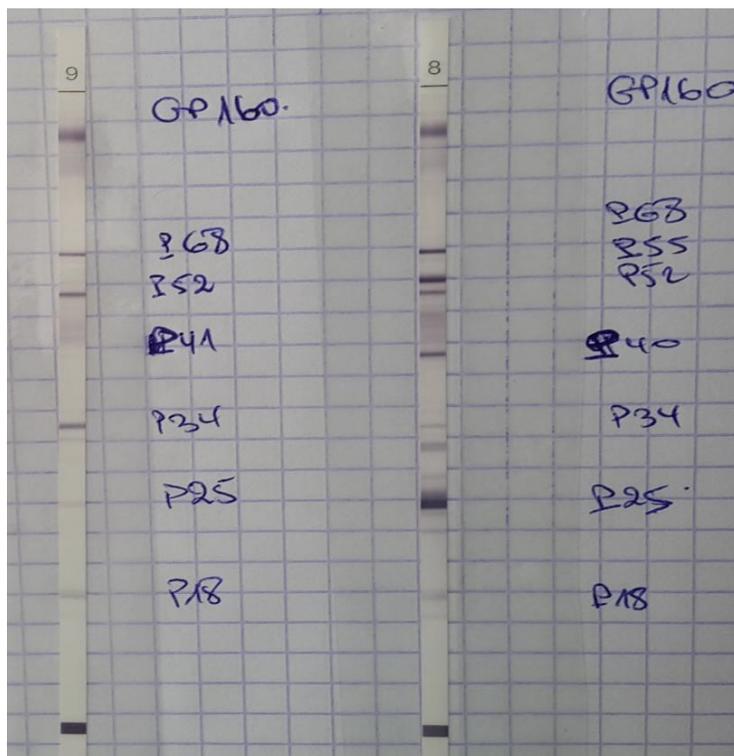


Figure 2: HIV profile obtained by Western blot

## Conclusion

Through this study, we confirm that the prevalence of infection with virus type 1 human immunodeficiency is 0.55%, which is still low prevalence although the risk of rapid change is not deviate. This implies better epidemiological surveillance that constitutes an essential element for the strategy against HIV aside the access to antiretroviral drugs and of HIV transmission preventive programs.

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